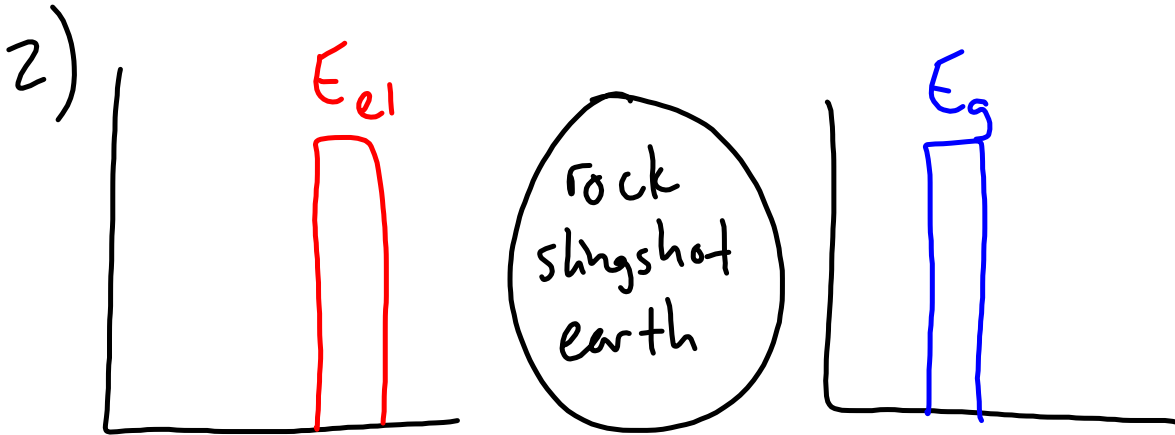


WORKSHEET 4



$$E_i = E_f$$

$$E_{el} = E_g$$

$$\frac{1}{2} k (\Delta x)^2 = m a_g h$$

$$h = \frac{k (\Delta x)^2}{2 m a_g}$$

$$= \frac{(100 \text{ N/m}) (0.3 \text{ m})^2}{2 (0.5 \text{ kg}) (9.8 \text{ m/s}^2)}$$

$$= 0.918 \text{ m}$$



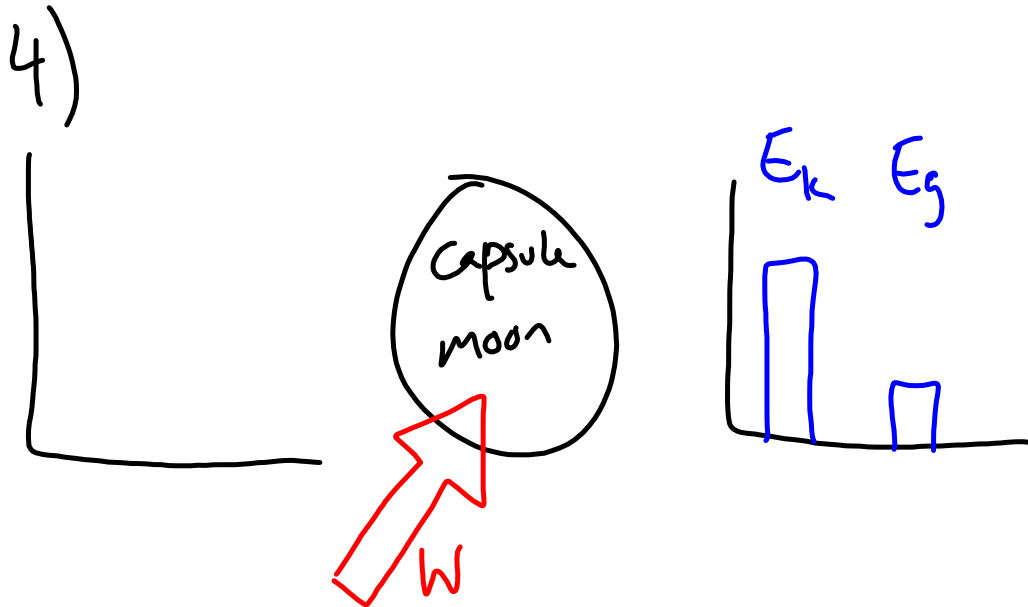
$$E_g = E_k + E_{th}$$

$$\cancel{m} a_g h_i = \frac{1}{2} \cancel{m} v_f^2 + (0.1) \cancel{m} a_g h_i$$

$$\frac{1}{2} v_f^2 = a_g h_i - (0.1) a_g h_i$$

$$v_f = \sqrt{2[a_g h_i - (0.1) a_g h_i]}$$

$$= 9.39 \text{ m/s}$$



$$W = E_k + E_g$$

$$= \frac{1}{2} m v_f^2 + m a_g h_f$$

$$= \frac{1}{2} (10000 \text{ kg}) (1700 \text{ m/s})^2 + (10000 \text{ kg})$$

(1.6 N/kg)

(100000 m)

$$= 1.61 \text{ E } 10 \text{ J}$$

LAB - HUMAN POWER

- Which set of muscles produces the most power?

- Stairs $\rightarrow (26)(0.165\text{ m}) = 4.29\text{ m}$ (d
OR
h)
 $(13)(0.165\text{ m}) = 2.15\text{ m}$

- $F \Rightarrow F_g = m a_g \Rightarrow W = F_g d$

OR

$$E_g = m a g h$$

d for pushups \rightarrow length of arm

$$1\text{ kg} = 2.2\text{ pounds}$$

d for curls \rightarrow arm hanging to arm curled